ABSTRACT

To achieve a PLL circuit capable of operating in a broad band, let the PLL circuit be formed of two separate loops one of which is for feed-back of an output from an oscillator to this oscillator through its associative proportional control unit and the other of which is for feed-back of an output of the oscillator to the oscillator via an integral control unit. The proportional controller is for use in controlling an output frequency of the oscillator and is operable to generate a control signal based on a difference between input and output signals. The integral controller is for control of the phase of an output signal of the oscillator to thereby generate a control signal based on a phase difference between input and output signals. Further, the PLL circuit employs a current-controlled oscillator while letting the integral controller for phase synchronization consist essentially of a phase comparator and charge pump circuit plus V/I conversion circuit as well as T/I converter. And, apply a current switch circuit made up of a current switch with its control electrode forward-biased and a current switch driving complementary output voltage switch with its output connected to a low voltage-side electrode of the current switch to more than one current switch of the charge-pump circuit and/or T/I converter circuit. THE

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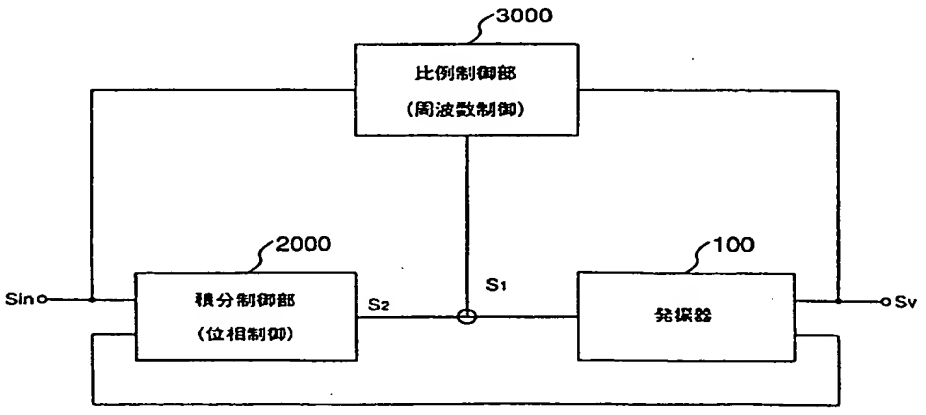
(57) Abstract

A PLL circuit operable in a wide band comprises two loops, i.e. a loop for feeding the output of an oscillator back to the oscillator through a proportional control section, and a loop for feeding the output of the oscillator back to the oscillator through an integral control section. The proportional control section controls the output frequency of the oscillator and produces a control signal from the difference between the input and output signals. The integral control section controls the phase of the output signal of the oscillator and produces a control signal from the phase difference between the input and output signals. The integral control section for locking the phase by applying a current-controlled oscillator to the PLL circuit comprises a phase comparator, charge pump circuit, a V/I conversion circuit, and a T/I converter. A current switch circuit comprising a current switch having a forward-biased control electrode and a voltage switch used for driving the complementary output current switch and having an output connected to the low voltage side electrode of the current switch is applied to the current switch for the charge pump circuit and the T/I conversion circuit.



100 ... Oscillator
2000 ... Integral control section (phase control)
3000 ... Proportional control section (frequency control)